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COMMENTS: As we discussed, the restriction requirement. Please call me after you have reviewed the attached pending claims.

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PENDING CLAIMS

- 1 1. A low-resistance resistor comprising:
 - 2 a resistor element made of a metal sheet; and
 - 3 a metal terminal disposed at both ends of said resistor element,
 - 4 said terminal has an electrical conductivity equal to or greater
 - 5 than that of said resistor element, and
 - 6 said terminal has a groove of a width fittable to said resistor
 - 7 element, and;
 - 8 said resistor element and said terminal are electrically connected
 - 9 by inserting said resistor element into said groove with a third metal inbetween.
- 1 2. The low-resistance resistor as defined in Claim 1, wherein a
2 thickness of said terminal is thicker than a total thickness of said resistor
3 element.
- 1 4. The low-resistance resistor as defined in Claim 1, wherein at
2 least a part of a surface of said resistor element is covered with an insulating
3 layer.
- 1 5. The low-resistance resistor as defined in Claim 4, wherein said
2 insulating layer completely covers said resistor element.
- 1 6. The low-resistance resistor as defined in Claim 4, wherein said
2 insulating layer is made of at least one of epoxy resin, polyimide resin, and
3 poly-carbodiimide resin.
- 1 7. A low-resistance resistor comprising:
 - 2 a resistor element made of metal sheet;
 - 3 an insulating substrate disposed at least on one of top and bottom
 - 4 faces of said resistor element;

5 a terminal having a groove of a width equivalent to a sum of a
6 thickness of said resistor element and said insulating substrate; and

7 a third metal formed between said resistor element and said
8 groove;

9 wherein said resistor element and said terminal are electrically
10 connected through said third metal.

1 8. The low-resistance resistor as defined in Claim 7, wherein said
2 insulating substrate is made of one of alumina, glass, glass impregnated epoxy
3 resin substrates, and paper impregnated phenolic resin substrates.

1 9. The low-resistance resistor as defined in Claim 7,

2 wherein an insulating layer covers a part of a surface of said
3 resistor element.

1 10. The low-resistance resistor as defined in Claim 7, wherein a
2 thickness of said terminal is at least three times of a sum of a thickness of said
3 resistor element and a thickness of said insulating substrate.

1 11. A low-resistance resistor comprising:

2 a resistor element made of metal sheet; and

3 a metal terminal disposed at both ends of said resistor element,
4 said terminal being made of metal having greater electrical conductivity than
5 that of said resistor element, and having an L shape section face;

6 wherein said resistor element and said terminal are electrically
7 connected through a third metal.

1 12. The low-resistance resistor as defined in Claim 11, wherein
2 at least a part of a surface of said resistor element is covered with an insulating
3 layer.

1 13. A low-resistance resistor comprising:

2 a resistor element made of metal sheet;
3 an insulating sheet attached to at least one face of said resistor
4 element; and
5 a metal terminal disposed at both ends of said resistor element,
6 said terminal being made of metal having greater electrical conductivity than
7 that of said resistor element, and having an L shape section face;
8 wherein said resistor element and said terminal are electrically
9 connected through a third metal.

1 14. A resistor comprising:

2 a metal resistor element provided with a step between both ends
3 by making a thickness of said both ends thicker than a central portion; and
4 a metal terminal disposed at both ends of said resistor element,
5 said terminal having a one-side-open section face with an inner space broader
6 than its opening, and being electrically connected to said step of said resistor
7 element at least at said inner space of the opening.

1 15. A low-resistance resistor comprising:

2 a resistor element made of metal sheet;
3 an insulating substrate; and
4 at least two metal terminals formed in a way to electrically
5 connect top and bottom faces of said insulating substrate;
6 wherein said resistor element and said metal terminals are
7 electrically connected through a third metal.

1 16. The low-resistance resistor as defined in Claim 15, wherein
2 at least a part of a surface of said resistor element is covered with an insulating
3 layer.

1 17. The low-resistance resistor as defined in Claim 15, wherein
2 said insulating substrate is made of one of alumina, glass, glass impregnated
3 epoxy resin substrates, and paper impregnated phenolic resin substrates.

1 18. A low-resistance resistor comprising:

2 a resistor element made of metal sheet; and

3 four metal terminals, said terminals being disposed one each on
4 top and bottom faces at both ends of said resistor element, and electrically
5 connected to said resistor element through third metal.

1 19. The resistor as defined in Claim 18, wherein a width of said
2 terminals are not less than a width of said resistor element.

1 20. The resistor element as defined in Claim 18, wherein said
2 terminals disposed on top and bottom faces at both ends of said resistor element
3 are electrically connected to each other.

1 21. A resistor comprising:

2 a metal resistor element having a notch near both ends; and

3 a metal terminal disposed at both ends of said resistor element,
4 said terminal having a protrusion corresponding to said notch;

5 wherein said resistor element and said terminal are electrically
6 connected at least through said protrusion and said notch.

1 22. A resistor comprising:

2 a metal resistor element having at least two through holes; and

3 a metal terminal having at least one protrusion with a same shape
4 as said through holes;

5 wherein at least one protrusion of said terminal is inserted to at
6 least one through hole of said resistor element, and at least one face of said

7 terminal is electrically connected to said resistor element.

1 23. The low-resistance resistor as defined in Claim 18, wherein
2 at least a part of a surface of said resistor element is covered with an insulating
3 layer.

1 24. The low-resistance resistor as defined in Claim 21, wherein
2 at least a part of a surface of said resistor element is covered with an insulating
3 layer.

1 25. The low-resistance resistor as defined in Claim 22, wherein
2 at least a part of a surface of said resistor element is covered with an insulating
3 layer.

1 28. A method for manufacturing a low-resistance resistor
2 comprising:

3 forming a resistor element made of a metal sheet, said resistor
4 element having a shape adjusted to obtain a predetermined resistance;

5 forming a metal terminal having a groove;

6 fitting said terminal to both ends of said resistor element; and

7 electrically connecting said resistor element and said terminal;

8 wherein a third metal layer is formed on at least one of

9 a) a connecting portion of said resistor element, and

10 b) connecting portion of said terminal

11 before fitting said terminal to said resistor element.

1 29. The method for manufacturing a low-resistance resistor as
2 defined in Claim 28, further comprising the step of forming an insulating layer
3 except on said terminal after said step of electrical connection.

1 30. A method for manufacturing a resistor comprising:

2 forming a terminal made of a metal foil pattern with a
3 predetermined shape on a part of top and bottom faces of an insulating
4 substrate, said terminal being electrically connected to top, side, and bottom
5 faces of said insulating substrate;

6 dividing said insulating substrate into a predetermined shape;

7 forming a metal resistor element, said resistor element having a
8 shape adjusted to obtain a predetermined resistance;

9 electrically connecting said resistor element to the metal foil
10 pattern on the top face of said insulating substrate.

1 31. A method for manufacturing a resistor comprising:

2 forming a metal resistor element, said resistor element being
3 adjusted to obtain a predetermined resistance;

4 forming a block of metal terminal having at least one protrusion;

5 creating at least two through holes at a predetermined position of
6 said resistor element;

7 inserting at least one of said protrusion into at least one of said
8 through hole;

9 folding an open side of said terminal to hold said resistor in a
10 thickness direction; and

11 electrically connecting said resistor element and said terminal.

1 32. The method for manufacturing a low-resistance resistor as
2 defined in Claim 28, wherein said terminal is electrically connected to both
3 ends of said resistor element by one of pressing, caulking, and cold forging, and
4 then one of heating, thermal compression bonding, brazing, and ultrasonic
5 welding.

1 33. The method for manufacturing a low-resistance resistor as
2 defined in Claim 28, wherein said step of forming said third metal layer is
3 implemented by one of plating and paste printing.

1 34. The method for manufacturing a resistor as defined Claim
2 28, wherein said step of electrically connecting said resistor element and
3 terminal comprises :

4 coating said at least one of said resistor element and terminal with
5 metal different from that used for forming said resistor element and said
6 terminal;

7 connecting said resistor element and said terminal, after
8 assembling coated resistor element and terminal, by one of brazing, pressing,
9 and ultrasonic welding.

1 35. A method for manufacturing a resistor comprising:

2 forming a metal resistor element, said resistor element having a
3 shape adjusted to obtain a predetermined resistance;

4 forming one of a notch and groove at a predetermined position of
5 said resistor element;

6 forming a block of metal terminal with a predetermined shape,
7 said terminal having at least one protrusion;

8 sandwiching said resistor element with said terminal, and
9 inserting said protrusion into one of said notch and groove; and

10 electrically connecting said resistor element and said terminal.

1 36. A method for manufacturing a resistor comprising:

2 forming a resistor element made of metal sheet, said resistor
3 element having a shape adjusted to obtain a predetermined resistance; and
4 having one of at least two through holes, notches, grooves, and cavities;

5 forming a terminal made of metal strip, said terminal being one of
6 sandwiched and folded on top, bottom, and side faces at both ends of said
7 resistor element, and a part of metal being inserted and fixed to one of said
8 through holes, notches, grooves, and cavities of said resistor element; and

9 electrically connecting said resistor element and said terminal.

1 37. The method for manufacturing a low-resistance resistor as
2 defined in Claim 29, wherein a step of trimming resistance is added before said
3 step of forming said insulating layer.

1 44. The low-resistance resistor as defined in Claim 2, wherein a
2 thickness of said terminal is at least three times of a total thickness of said
3 resistor element.

1 45. The method for manufacturing a low-resistance resistor as
2 defined in Claim 29, wherein said terminal is electrically connected to both
3 ends of said resistor element by one of pressing, caulking, and cold forging, and
4 then one of heating, thermal compression bonding, brazing, and ultrasonic
5 welding.

1 46. The method for manufacturing a low-resistance resistor as
2 defined in Claim 30, wherein said terminal is electrically connected to both
3 ends of said resistor element by one of pressing, caulking, and cold forging, and
4 then one of heating, thermal compression bonding, brazing, and ultrasonic
5 welding.

1 47. The method for manufacturing a low-resistance resistor as
2 defined in Claim 31, wherein said terminal is electrically connected to both
3 ends of said resistor element by one of pressing, caulking, and cold forging, and
4 then one of heating, thermal compression bonding, brazing, and ultrasonic
5 welding.

1 48. The method for manufacturing a resistor as defined in Claim
2 29, wherein said step of electrically connecting said resistor element and
3 terminal comprises :

4 coating said at least one of said resistor element and terminal with

5 metal different from that used for forming said resistor element and said
6 terminal;

7 connecting said resistor element and said terminal, after
8 assembling coated resistor element and terminal, by one of brazing, pressing,
9 and ultrasonic welding.

1 49. The method for manufacturing a resistor as defined in Claim
2 30, wherein said step of electrically connecting said resistor element and
3 terminal comprises :

4 coating said at least one of said resistor element and terminal with
5 metal different from that used for forming said resistor element and said
6 terminal;

7 connecting said resistor element and said terminal, after
8 assembling coated resistor element and terminal, by one of brazing, pressing,
9 and ultrasonic welding.

1 50. The method for manufacturing a resistor as defined in Claim
2 31, wherein said step of electrically connecting said resistor element and
3 terminal comprises :

4 coating said at least one of said resistor element and terminal with
5 metal different from that used for forming said resistor element and said
6 terminal;

7 connecting said resistor element and said terminal, after
8 assembling coated resistor element and terminal, by one of brazing, pressing,
9 and ultrasonic welding.